



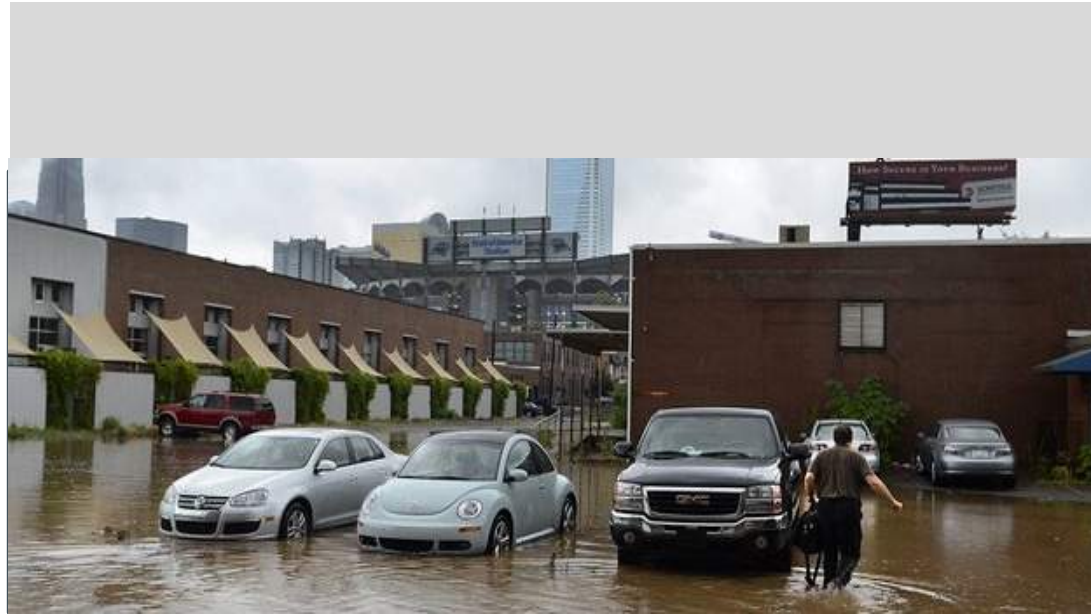
Public Information Meeting

Roof with a View

800 West Hill Street
Suite 104
Charlotte, NC 28208

May 12, 2015
6:00pm-8:00pm

Dewberry
6135 Lakeview Rd. Suite 150
Charlotte, NC 28269



Hill Street

Storm Drainage Improvement Project





Matthew Gustis, PE

City Engineering Team Program Manager

Doug Lozner, PE

City Watershed Area Manager

Steven McCraney

City Project Coordinator

Danee McGee, PE, CFM

City Project Manager

704-336-4103

dmcgee@ci.charlotte.nc.us

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Staff Introductions



Christopher Fleck, PE

Project Manager

Crystal Williams, PE, CFM

Project Engineer

Jonathan Drazenovich

Project Engineer

AGENDA

Sign In

Charlotte Mecklenburg Storm Water Services Summary

Project Selection & Citizen Involvement

Existing Conditions Analysis Overview

Selected Alternative

Future Project Milestones

- Geo-Environmental
- Design
- Permitting
- Real Estate
- Construction



Charlotte Mecklenburg Stormwater Services Summary

Items that qualify for service:

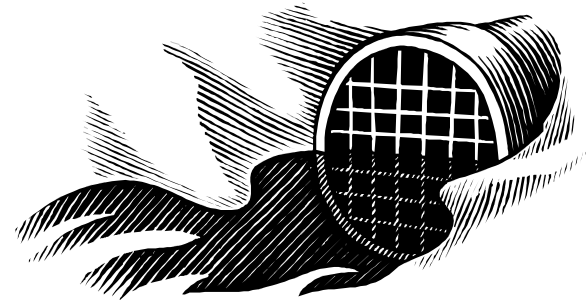
- Public water that causes another qualifying problem, such as roadway and/or structural flooding.

Items that DO NOT qualify for service:

- Private property issues. Such as parking lots, private pipes under buildings, downspouts, and private yard flooding.

What the program includes:

- Administration and Technology
- Water Quality
- Maintenance
- Engineering

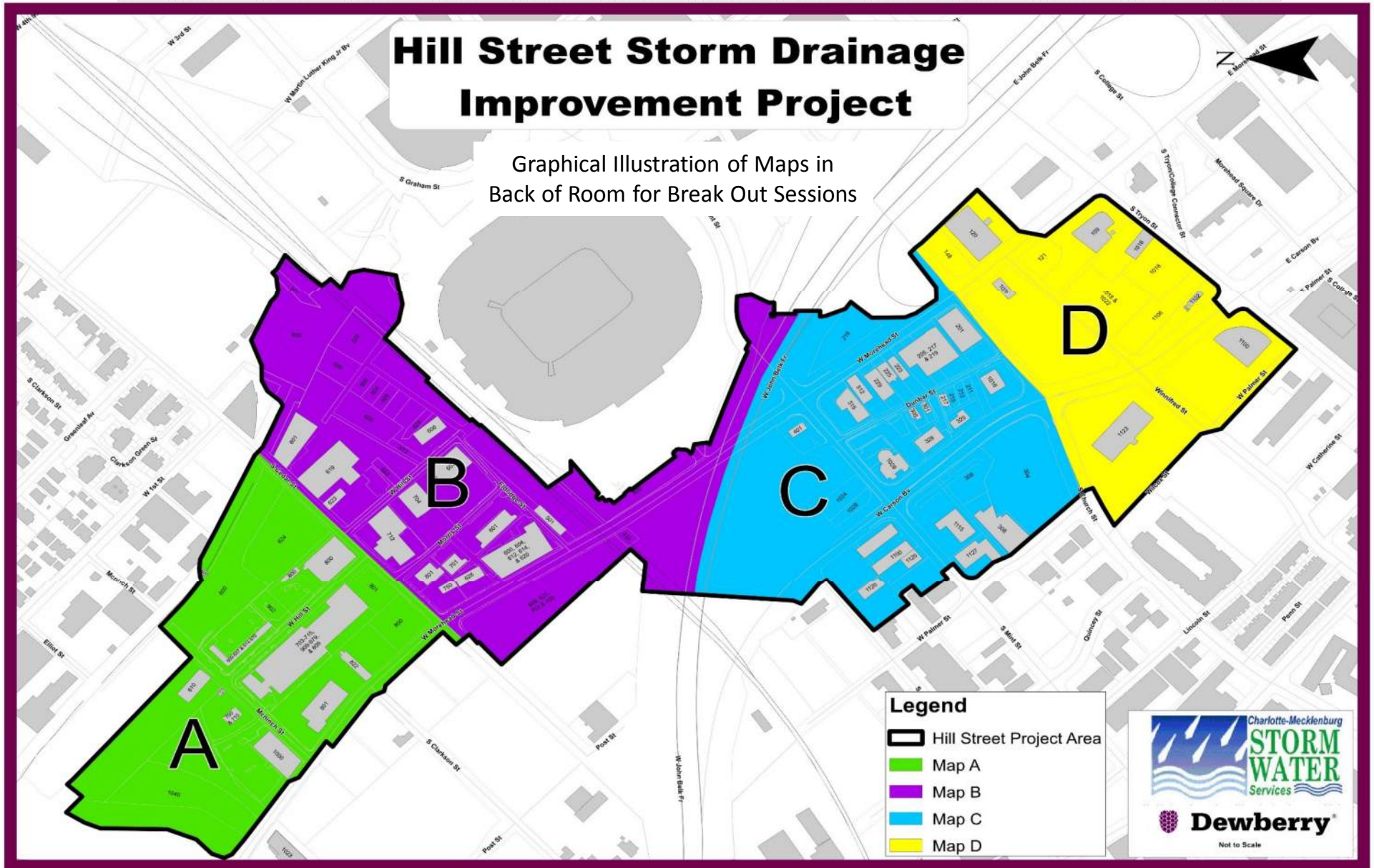


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Overall Project Site Map

Hill Street Storm Drainage Improvement Project

Graphical Illustration of Maps in
Back of Room for Break Out Sessions



Why Hill Street was selected?

- ✓ Citizen Input from Property Owners (311 Requests)
 - ✓ Inadequate Existing Infrastructure
 - ✓ Observed Existing Road Flooding
 - ✓ Existing Structure Flooding
- ✓ Deteriorating Infrastructure
 - ✓ Aging culverts, pipes, and inlets
- ✓ CMSWS watershed ranking
- ✓ Larger watershed-wide and city-wide drainage issues



What do we need from you?

- Support for the project's future phases.

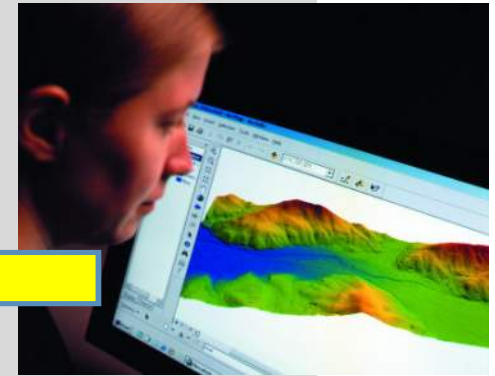


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Integrating:



Field Data



Technology

**Citizen
Input**



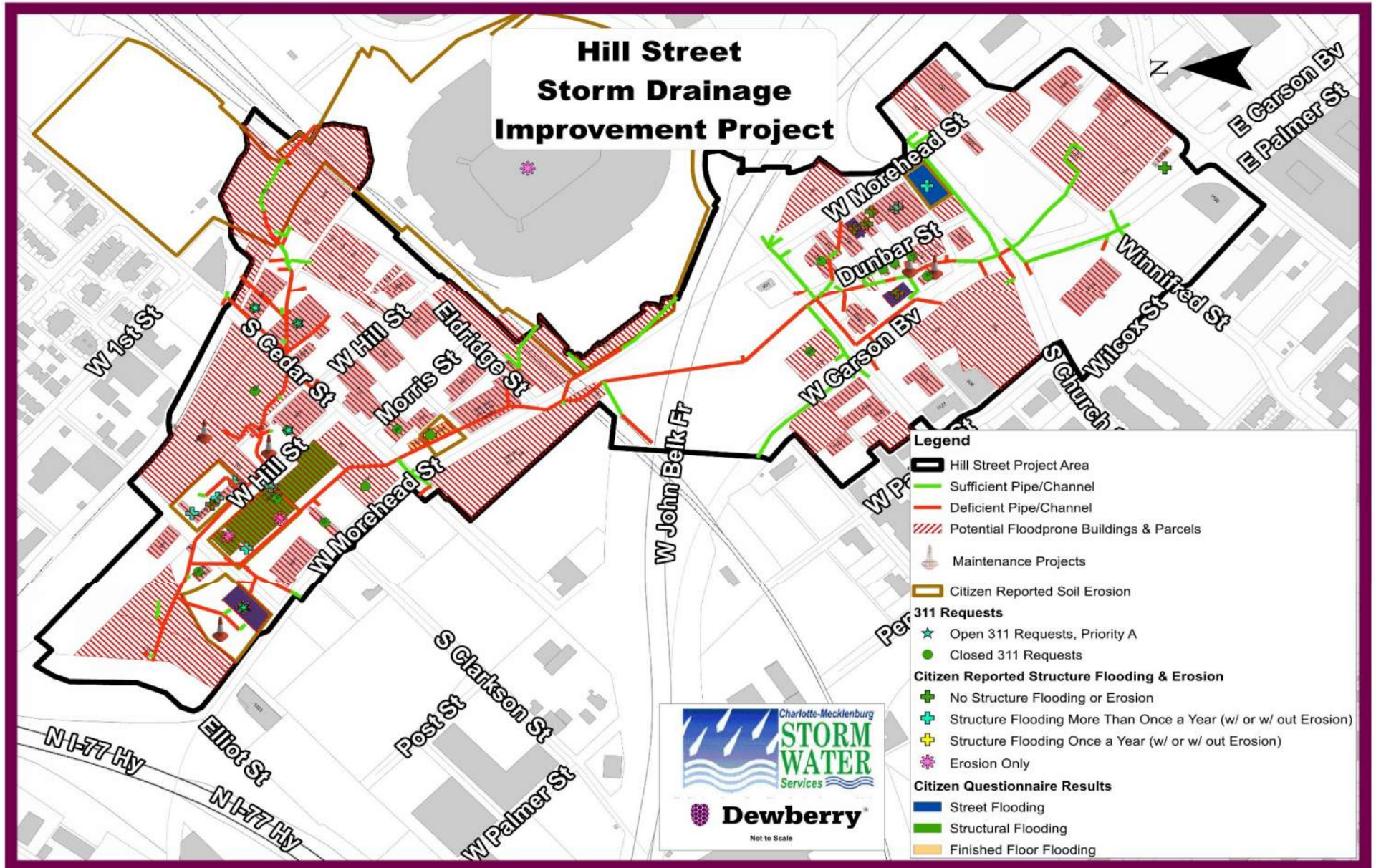
Existing Conditions Analysis Overview

- Survey of Existing Information
 - Topographic Survey
 - System Inventory
- Existing Zoning, Land Use, Soils
- Engineering Evaluation of Existing System Performance
- Mapping and Reports of Engineering Results



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Existing Conditions Overview Map



Existing Conditions Analysis Results

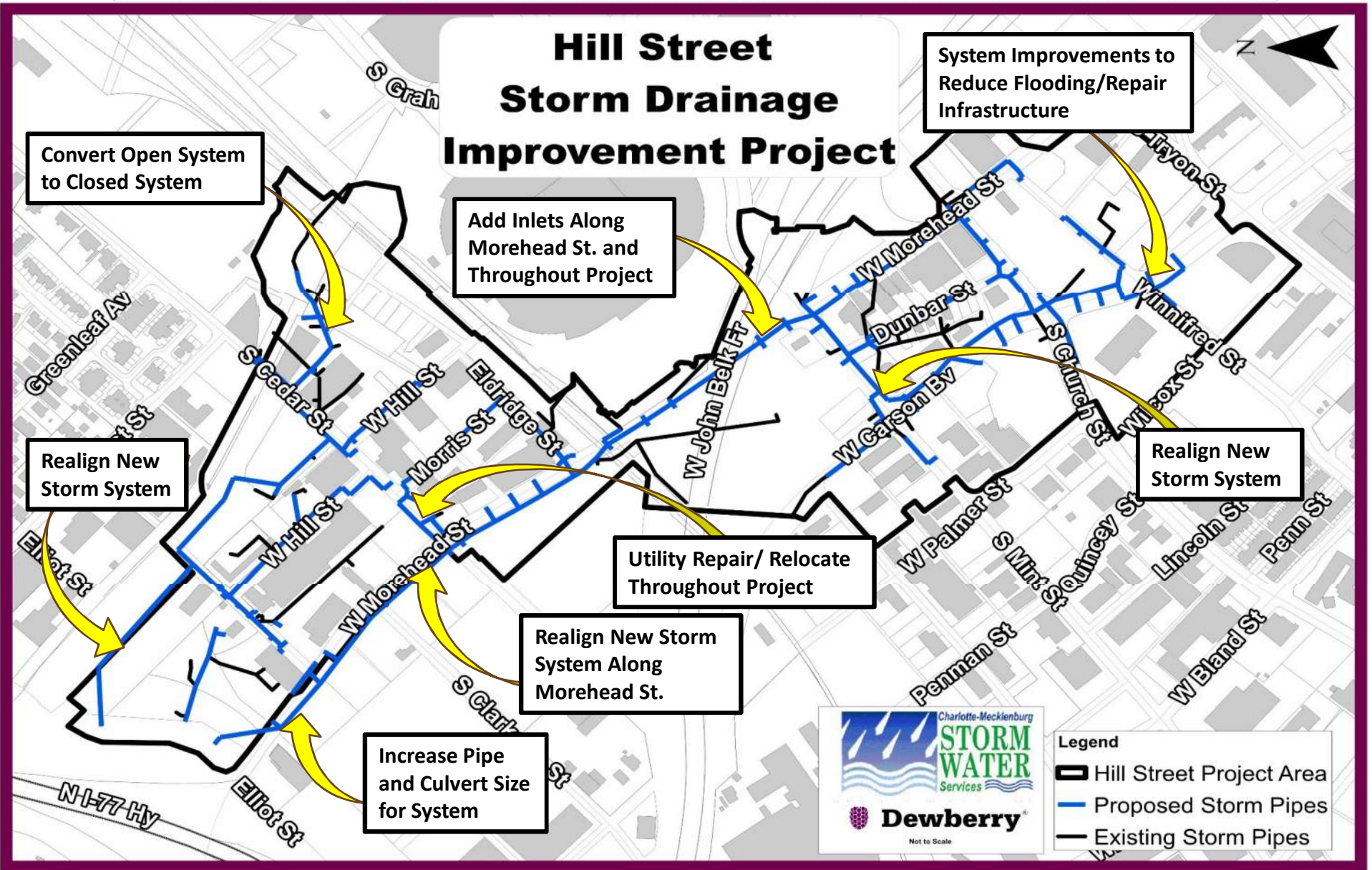
-Based on nearly 50 different criteria for pipes, channels, inlets, etc., our consultants found that:

- 75% of storm drainage pipes in project area are deficient
- 40% of storm drainage channels in project area are deficient
- 100% of storm drainage culverts in project area are deficient
- 40% of storm drainage inlets in project area are deficient
- 70% of the buildings in the project area are potentially flood prone during the design storm.



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Selected Alternative Overview



City Design Standards Results

-Based on nearly 20 different criteria for pipes, channels, inlets, etc., our consultants found the following improvements necessary:

- 4.1 miles of Proposed Storm System
- 459 Proposed Storm Drainage Structures
- Approximately 4000 LF of Utility Relocations



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Selected Alternative Results

Goals

- To provide a storm drainage system that is safe, clean, and cost effective.
- To determine the best possible solutions by:
 - Considering Public Safety, Health & Welfare
 - Maximizing Benefit vs. Cost
 - Working to Reduce Potential Flood Risks
 - Alleviating 100 Year Finished Floor Flooding

Based on nearly 20 different criteria for pipes, channels, inlets, etc., our consultants found the following improvements necessary:

- 4.5 miles of Proposed Storm System
- 486 Proposed Storm Drainage Structures
- Approximately 4500 LF of Utility Relocations



City Design vs. Selected Alternative

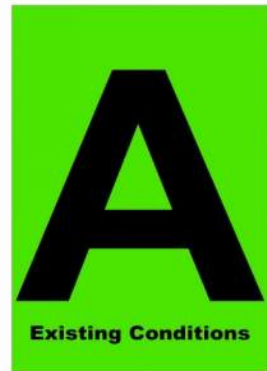
Analysis	Pros	Cons
City Design	<ul style="list-style-type: none"> - Maintains more of existing alignments where possible - Alleviates building flooding from design storm event 	<ul style="list-style-type: none"> - Requires costly boring under HWY-277 - Significant foundation protection required - Significant Impacts to private property due to alignments and easements - Larger culverts due to single system design - Constructability - Cost
Selected Alternative	<ul style="list-style-type: none"> - Smaller culverts than the City Design system due to a parallel system - Pipe alignments utilize existing right of way - Reduces impact to private property - Eliminates costly boring under HWY-277 - Alleviates building flooding from design storm event 	<ul style="list-style-type: none"> - Significant foundation protection required - Cost



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Existing Conditions Map A

Hill Street SDIP Existing Conditions



Irwin Creek

M-Team Project (Typ)

Potential Floodprone
Vacant Lot (Typ)

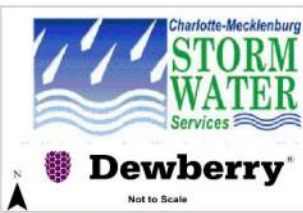
Deficient
Pipe (Typ)

Deficient
Inlet (Typ)

Potential
Floodprone
Building (Typ)

Legend

- Sufficient Storm Water System
- Deficient Storm Water System
- Potential Floodprone Buildings & Parcels
- ★ Open 311 Requests, Priority A
- Closed 311 Requests
- Maintenance Projects
- Citizen Reported Soil Erosion
- Citizen Reported Structure Flooding & Erosion
 - No Structure Flooding or Erosion
 - Structure Flooding More Than Once a Year (w/ or w/ out Erosion)
 - Structure Flooding Once a Year (w/ or w/ out Erosion)
 - Erosion Only
- Citizen Questionnaire Results
 - Street Flooding
 - Structural Flooding
 - Finished Floor Flooding



Selected Alternative Map A

A

Hill Street SDIP Selected Alternative

Irwin Creek

M-Team Project (Typ)

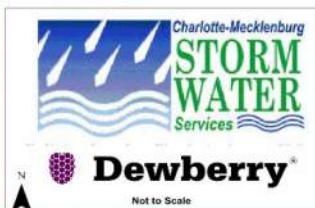
Realign Storm System

Removal of Existing
Storm System

Existing Storm Pipe

Realign Storm System

- Legend**
- Proposed Single Inlet (SA100YR)
 - Proposed Double Inlet (SA100YR)
 - Proposed FES / HW (SA100YR)
 - Proposed MH / JB (SA100YR)
 - Proposed 12" RCP (SA100YR)
 - Proposed 15" RCP (SA100YR)
 - Proposed 18" RCP (SA100YR)
 - Proposed 24" RCP (SA100YR)
 - Proposed 30" RCP (SA100YR)
 - Proposed 36" RCP (SA100YR)
 - Proposed 42" RCP (SA100YR)
 - Proposed 48" RCP (SA100YR)
 - Proposed 60" RCP (SA100YR)
 - Proposed RCB (SA100YR)
 - SA100YR Channels Only
 - Abandon / Remove Ex Storm (SA100YR)
 - Existing Storm Pipes
 - Proposed Grading Limits (SA100YR)
 - Hill Street Project Area



Existing Conditions Map B

Hill Street SDIP Existing Conditions



Potential Floodprone
Building (Typ)

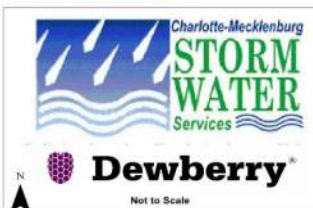
Deficient
Channel (Typ)

Potential Floodprone
Vacant Lot (Typ)

Deficient
Inlet (Typ)

Deficient
Pipe (Typ)

Legend	
	Sufficient Storm Water System
	Deficient Storm Water System
	Potential Floodprone Buildings & Parcels
	Open 311 Requests, Priority A
	Closed 311 Requests
	Maintenance Projects
	Citizen Reported Soil Erosion
Citizen Reported Structure Flooding & Erosion	
	No Structure Flooding or Erosion
	Structure Flooding More Than Once a Year (w/ or w/ out Erosion)
	Structure Flooding Once a Year (w/ or w/ out Erosion)
	Erosion Only
Citizen Questionnaire Results	
	Street Flooding
	Structural Flooding
	Finished Floor Flooding



Selected Alternative Map B

Hill Street SDIP Selected Alternative

B

Convert Open System
to Closed System

Additional Pipes
and Inlets

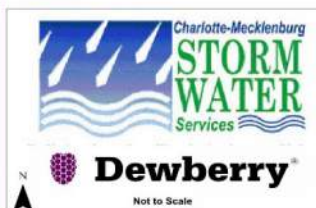
Realign Storm System

Additional Inlets
on Morehead St.

Existing Storm Pipe

Legend

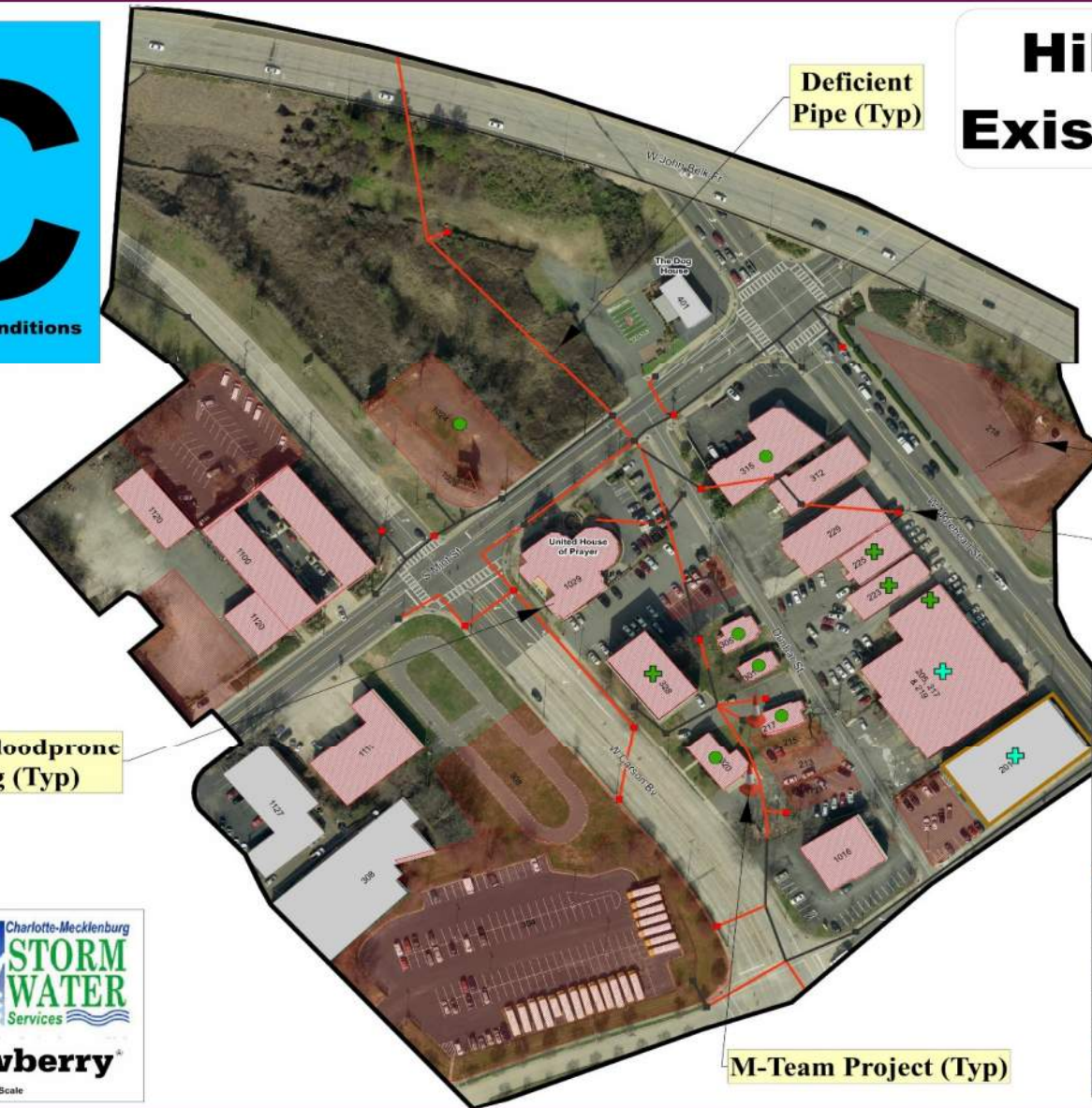
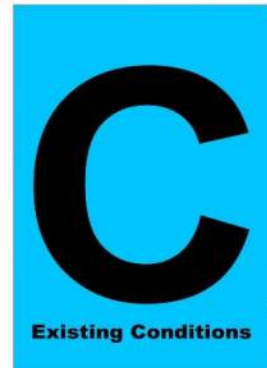
- Proposed Single Inlet (SA100YR)
- Proposed Double Inlet (SA100YR)
- Proposed FFS / HW (SA100YR)
- Proposed MH / JB (SA100YR)
- Proposed 12" RCP (SA100YR)
- Proposed 15" RCP (SA100YR)
- Proposed 18" RCP (SA100YR)
- Proposed 24" RCP (SA100YR)
- Proposed 30" RCP (SA100YR)
- Proposed 36" RCP (SA100YR)
- Proposed 42" RCP (SA100YR)
- Proposed 48" RCP (SA100YR)
- Proposed 60" RCP (SA100YR)
- Proposed RCBC (SA100YR)
- SA100YR Channels Only
- Abandon / Remove Ex Storm (SA100YR)
- Existing Storm Pipe
- Proposed Grading Limits (SA100YR)
- Hill Street Project Area



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Existing Conditions Map C

Hill Street SDIP Existing Conditions



- Legend**
- Sufficient Storm Water System
 - Deficient Storm Water System
 - Potential Floodprone Buildings & Parcels
 - ★ Open 311 Requests, Priority A
 - Closed 311 Requests
 - 🔧 Maintenance Projects
 - 📦 Citizen Reported Soil Erosion
 - Citizen Reported Structure Flooding & Erosion**
 - ✚ No Structure Flooding or Erosion
 - ✚ Structure Flooding More Than Once a Year (w/ or w/ out Erosion)
 - ✚ Structure Flooding Once a Year (w/ or w/ out Erosion)
 - ✚ Erosion Only
 - Citizen Questionnaire Results**
 - 📦 Street Flooding
 - 📦 Structural Flooding
 - 📦 Finished Floor Flooding

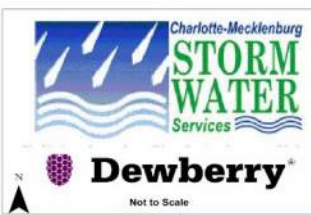
Potential Floodprone
Building (Typ)

Deficient
Pipe (Typ)

Potential Floodprone
Vacant Lot (Typ)

Deficient
Inlet (Typ)

M-Team Project (Typ)



Selected Alternative Map C

Hill Street SDIP Selected Alternative

Additional Inlets
on Morehead St.

Additional Pipes
and Inlets

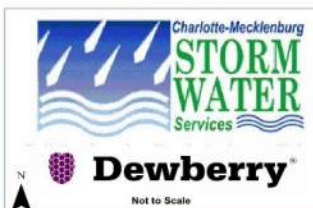
Existing Storm Pipe

Realign Storm System

Legend

- Proposed Single Inlet (SA100YR)
- Proposed Double Inlet (SA100YR)
- Proposed CES / HW (SA100YR)
- Proposed MH / JB (SA100YR)
- Proposed 12" RCP (SA100YR)
- Proposed 15" RCP (SA100YR)
- Proposed 18" RCP (SA100YR)
- Proposed 24" RCP (SA100YR)
- Proposed 30" RCP (SA100YR)
- Proposed 36" RCP (SA100YR)
- Proposed 42" RCP (SA100YR)
- Proposed 48" RCP (SA100YR)
- Proposed 60" RCP (SA100YR)
- Proposed RCBC (SA100YR)
- SA100YR Channels Only
- Abandon / Remove Ex Storm (SA100YR)
- Existing Storm Pipe
- Proposed Grading Limits (SA100YR)
- Hill Street Project Area

C

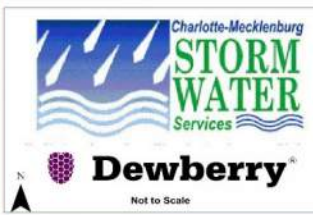


Existing Conditions Map D

Hill Street SDIP Existing Conditions



- Legend**
- Sufficient Storm Water System
 - Deficient Storm Water System
 - Potential Floodprone Buildings & Parcels
 - ★ Open 311 Requests, Priority A
 - Closed 311 Requests
 - 🔧 Maintenance Projects
 - 📦 Citizen Reported Soil Erosion
 - Citizen Reported Structure Flooding & Erosion**
 - ✚ No Structure Flooding or Erosion
 - ✚ Structure Flooding More Than Once a Year (w/ or w/ out Erosion)
 - ✚ Structure Flooding Once a Year (w/ or w/ out Erosion)
 - ✚ Erosion Only
 - Citizen_Questionnaire_Results_poly**
 - 🔴 Street Flooding
 - 🔴 Structural Flooding
 - 🔴 Finished Floor Flooding



Selected Alternative Map D

Hill Street SDIP Selected Alternative

D



Legend	
	Proposed Single Inlet (SA100YR)
	Proposed Double Inlet (SA100YR)
	Proposed FFS / HW (SA100YR)
	Proposed MH / JB (SA100YR)
	Proposed 12" RCP (SA100YR)
	Proposed 15" RCP (SA100YR)
	Proposed 18" RCP (SA100YR)
	Proposed 24" RCP (SA100YR)
	Proposed 30" RCP (SA100YR)
	Proposed 36" RCP (SA100YR)
	Proposed 42" RCP (SA100YR)
	Proposed 48" RCP (SA100YR)
	Proposed 60" RCP (SA100YR)
	Proposed RBCB (SA100YR)
	SA100YR Channels Only
	Abandon / Remove Ex Storm (SA100YR)
	Existing Storm Pipe
	Proposed Grading Limits (SA100YR)
	Hill Street Project Area



Planning- (*Completed*)

- Preliminary Survey (completed)
- Existing Conditions (completed)
- City Design Standard Analysis (completed)
- Alternative Analysis (completed)
- Selected Alternative Analysis (completed)

Design and Construction may be phased due to cost, size, and complexity of watershed.

Note: Downstream system to be constructed first

Geo-Environmental/Design Survey (In Progress)

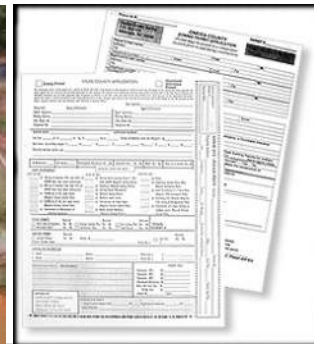
Design- Estimated 1 year duration

Real Estate\Easement Phase & Permitting- Estimated 1 year duration

Bid- Estimated 9 months duration

Construction- Estimated 1-2 year duration per phase (TBD)

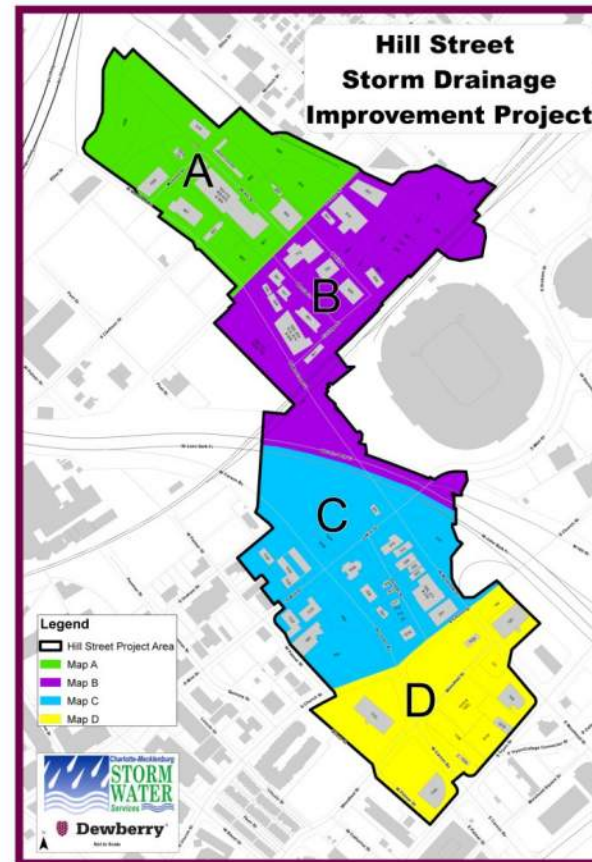
Future Project Milestones



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Conclusion

- Please remember to sign in and fill out a customer service card **if you have not filled one out previously**. Be sure to include if you are the owner or a tenant of the property.
- At the end of the presentation, please find the map where your property is located for details. Also feel free to speak to a representative to **let us know of any additional flooding you have observed**.
- General Discussion
- Thank you for coming to the meeting, and have a nice evening!



For more information please visit the Charlotte Mecklenburg Storm Water Services website at:
<http://charmeck.org/stormwater/Projects>





**Public Meeting Agenda
Hill Street Storm
Drainage Improvement Project
City Project #: 671-11-003
May 12, 2015
6:00 PM**

- ❖ **Sign In**
- ❖ **Charlotte Mecklenburg Storm Water Services Summary**
- ❖ **Project Selection and Citizen Involvement**
- ❖ **Existing Conditions Analysis Overview**
- ❖ **Selected Alternative**
- ❖ **Future Project Milestones**
 - **Geo-Environmental**
 - **Design**
 - **Permitting**
 - **Real Estate**
 - **Construction**

Contact

Danee McGee, PE, CFM
City Project Manager
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